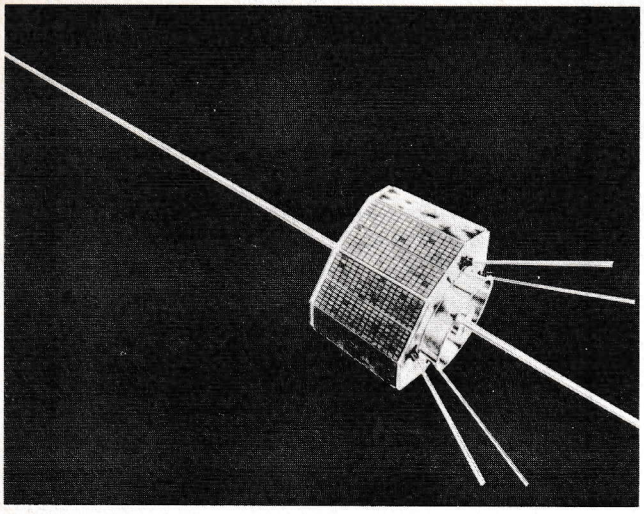
OSCAR
for beginners

PREPARED BY THE STAFF OF THE AMERICAN RADIO RELAY LEAGUE
Newington, Connecticut 06111

■ WHAT IS OSCAR?



OSCAR is the name of a series of satellites designed and built by amateur radio operators from several nations of the world. There have been seven OSCARs (Orbiting Satellites Carrying Amateur Radio) in the series. The first OSCAR was put into orbit in 1961, just four years after Sputnik 1 brought the world into the space age. OSCAR 1 was the world's first non-governmental satellite, having been designed and built by a group of volunteer amateur radio operators ("hams") from California. The two most recent OSCARs, numbers 6 and 7, are still circling the earth, providing two-way communication between amateur radio stations up to 5,000 miles (8,000 km) apart.

■ HOW DO THEY GET UP THERE?

When an OSCAR is planned, arrangements are made with NASA, the National Aeronautics and Space Administration, to schedule a launch alongside another satellite. OSCAR 7, for example, was launched "piggyback" with an ITOS-G weather satellite. The three most recent OSCARs were designed and constructed under the supervision of AMSAT (the Radio Amateur Satellite Corporation), a non-profit scientific organization in Washington, DC. Amateur radio operators from Australia, West Germany, Canada, the U.S. and Japan have contributed time and materials, making the satellites a truly international effort.

■ WHAT DO THEY DO?

As active communication satellites, OSCARs relay radio signals sent up to them from ground stations, allowing amateur radio operators all over the world to talk to one another. Communication across oceans is common, bringing people from different nationalities and cultures into direct contact. OSCARs 6 and 7 can receive and transmit several different types of communication--voice, Morse code and slow-scan television, among others. The "transponders" aboard the satellites make two-way communication possible. AMSAT-OSCAR 6 contains one transponder, which converts signals sent up to it on the amateur 2-meter band to the 10-meter band. AMSAT-OSCAR 7 contains two transponders, which alternate daily. One of them, called "Mode A," is nearly identical to the one aboard OSCAR 6 (2 to 10-m), but the other, called "Mode B," converts 70 cm signals to signals in the 2-meter band. The precise frequencies can be found elsewhere on this sheet.

Live demonstrations of the OSCAR satellites are held in schools to help teach general science, foreign languages, physics and electronics. In addition, they can be used for emergency communications when a natural disaster, such as an earthquake, knocks out other ties to the outside world. Successful experiments have shown that the OSCARs can relay medical information such as electrocardiograms from a disaster area to a hospital and help locate downed aircraft.

■ HOW CAN I HEAR OSCAR?

OSCAR's signals can be heard when the satellite passes up over the horizon. Since it is travelling at nearly 16,000 mph (25,000 km/hr), it soon speeds over the far horizon and out of range. But you will have up to 25 minutes to hear the satellite as it passes overhead. The radio, or receiver, that picks up OSCAR's signals is one that covers the amateur 10-meter band. In most cases, you must have an amateur radio license to talk through OSCAR with a 2-meter amateur transmitter (although anyone can listen!). The OSCARs are the only satellites that can be used with such relatively simple equipment. For further information on becoming an amateur radio operator, contact the ARRL, Newington, CT 06111.